

# ALUMINUM ALLOY EXTRUSIONS HAVING A SUBSTANTIALLY UNRECRYSTALLIZED STRUCTURE

## Field of the Invention

This invention pertains to an aluminum alloy substantially unrecrystallized structure. More specifically, the invention pertains to 2XXX series aluminum alloys and methods of making 2XXX series alloys which have a substantially unrecrystallized structure.

## Background of the Invention

A significant economic factor in operating aircraft today is the cost of fuel. As a consequence, aircraft designers and manufacturers are constantly striving to improve the overall fuel efficiency. One way to increase fuel efficiency, as well as overall airplane performance, is to reduce the structural weight of the airplane. Since aluminum alloys are used in a large number of the structural components of most aircraft, significant efforts have been expended to develop aluminum alloys that have higher strength-to-weight ratios than the alloys in current use, while maintaining the same or higher fracture toughness, fatigue crack growth resistance, high cycle fatigue resistance and corrosion resistance.

For example, one extrusion alloy currently used as stringers on the lower wing skins of some commercial jet aircraft is alloy 2024 in the T3511 temper. Alloy 2024-T3511 has a relatively high fracture toughness, good high cycle fatigue resistance, very high resistance to fatigue crack growth, and adequate strength and corrosion resistance. Another currently available alloy sometimes used on commercial jet aircraft

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